

September 6, 2012



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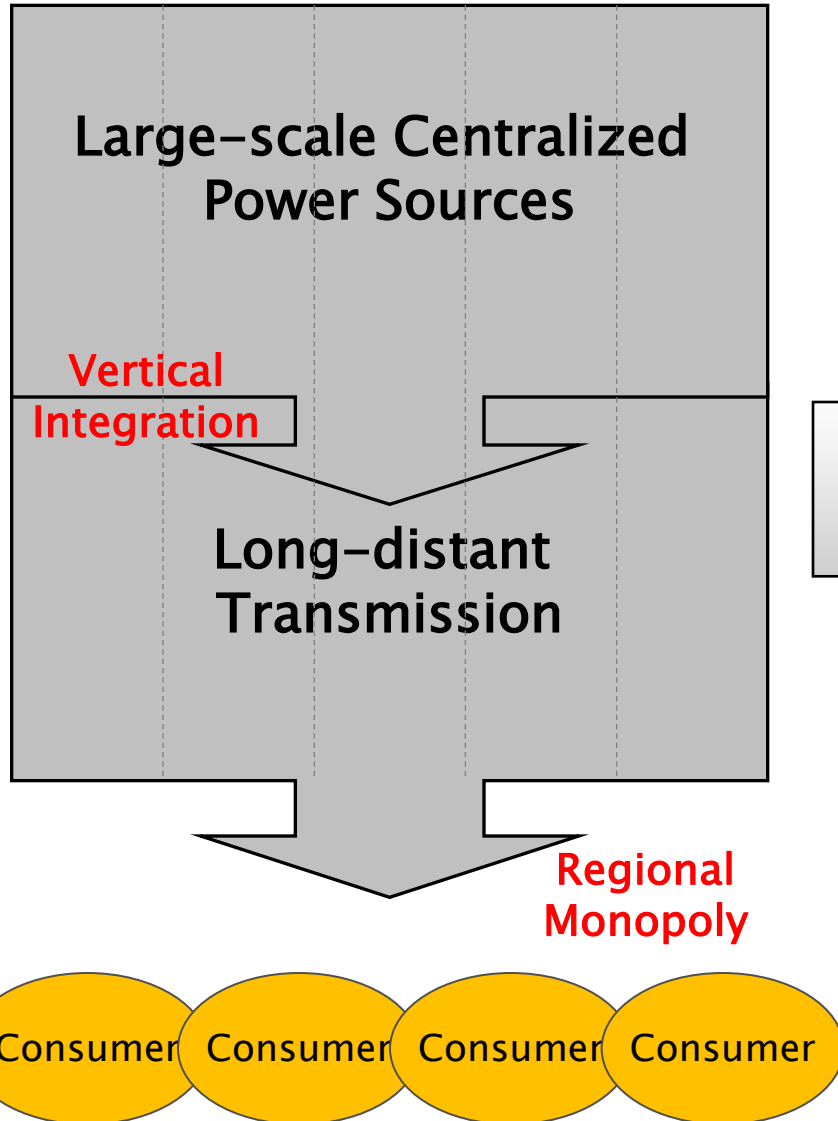
# *Power System Reform after 3.11*

*– toward decentralized–open system –*

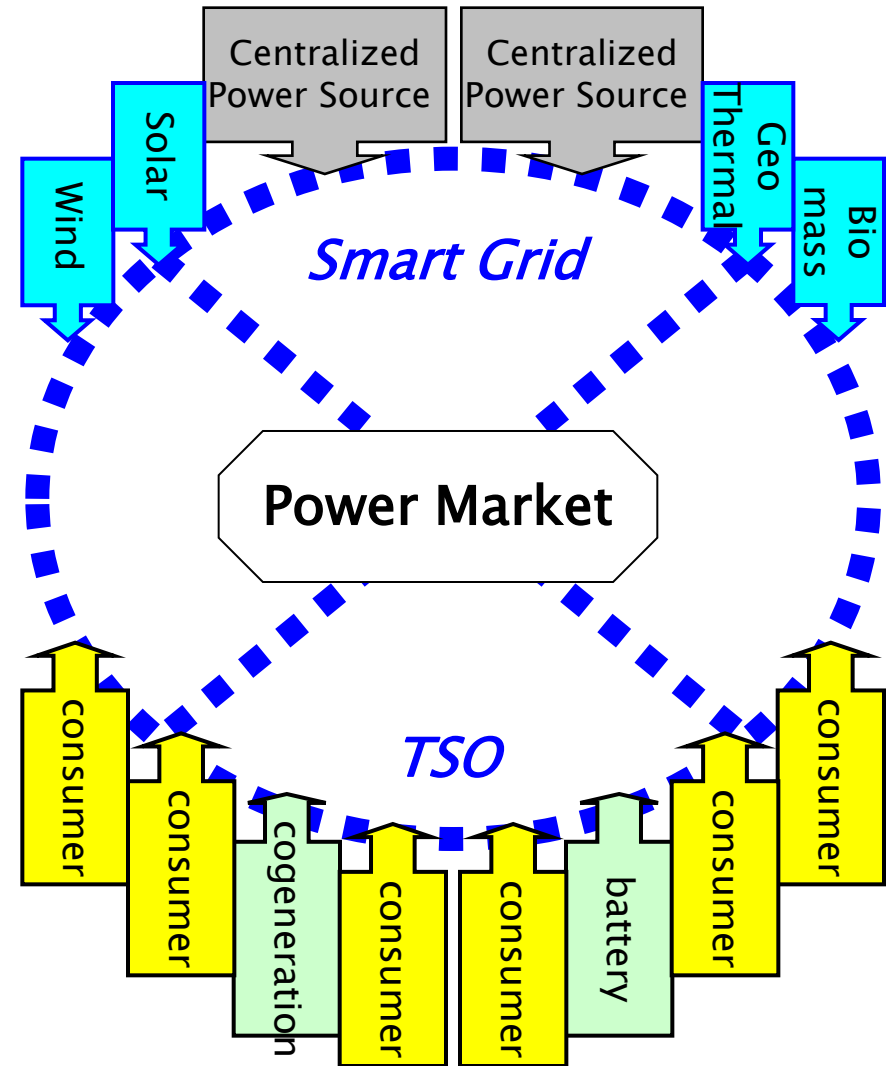
**Hiroshi TAKAHASHI, Ph.D.**  
Research Fellow, Fujitsu Research Institute

# Paradigm Shift of Power System

– Centralized–Close System –



– Decentralized–Open System –

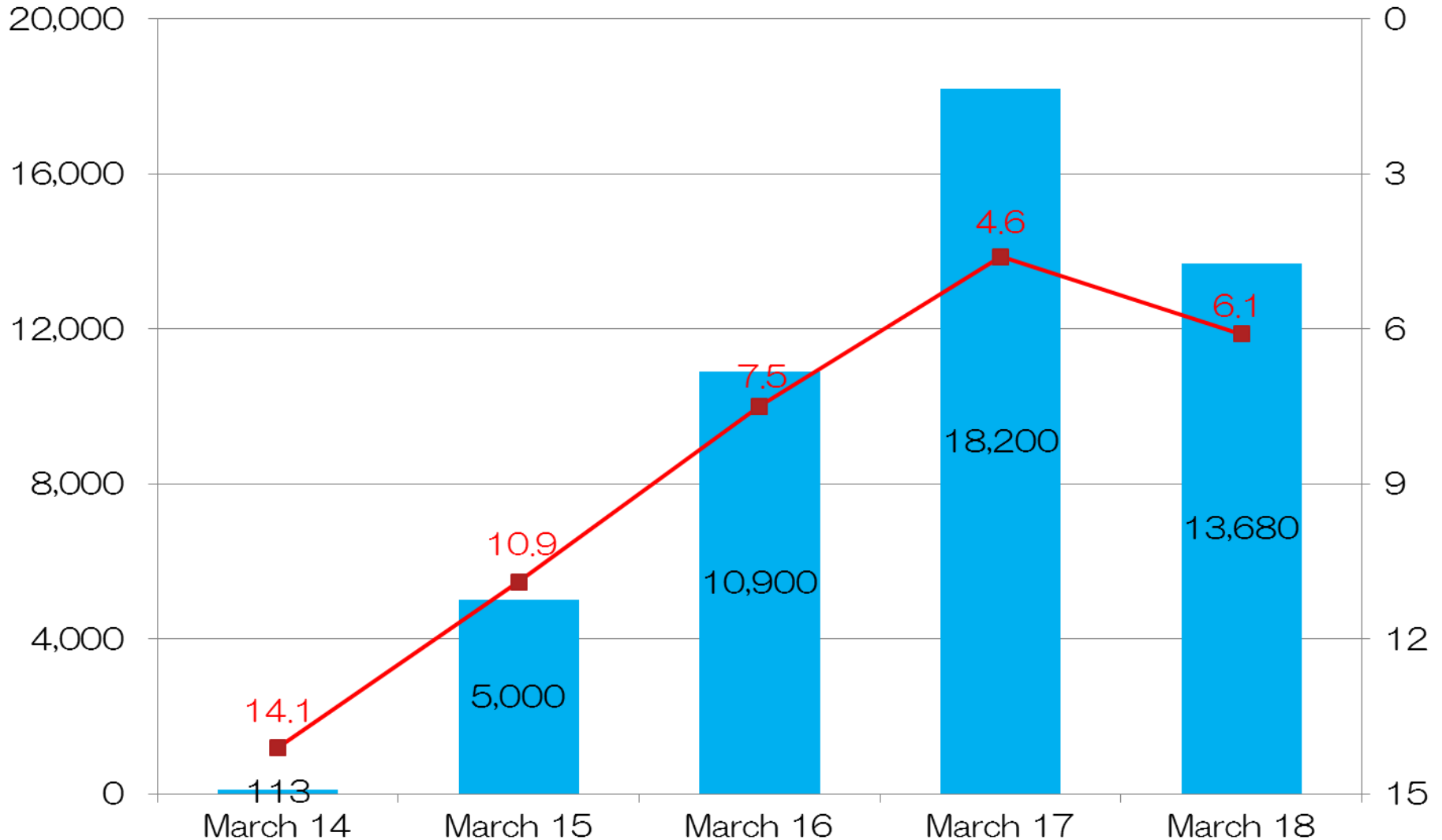


# March, 2011 : Rolling Blackout

## “Planned” Rolling Blackout in TEPCO’s Area

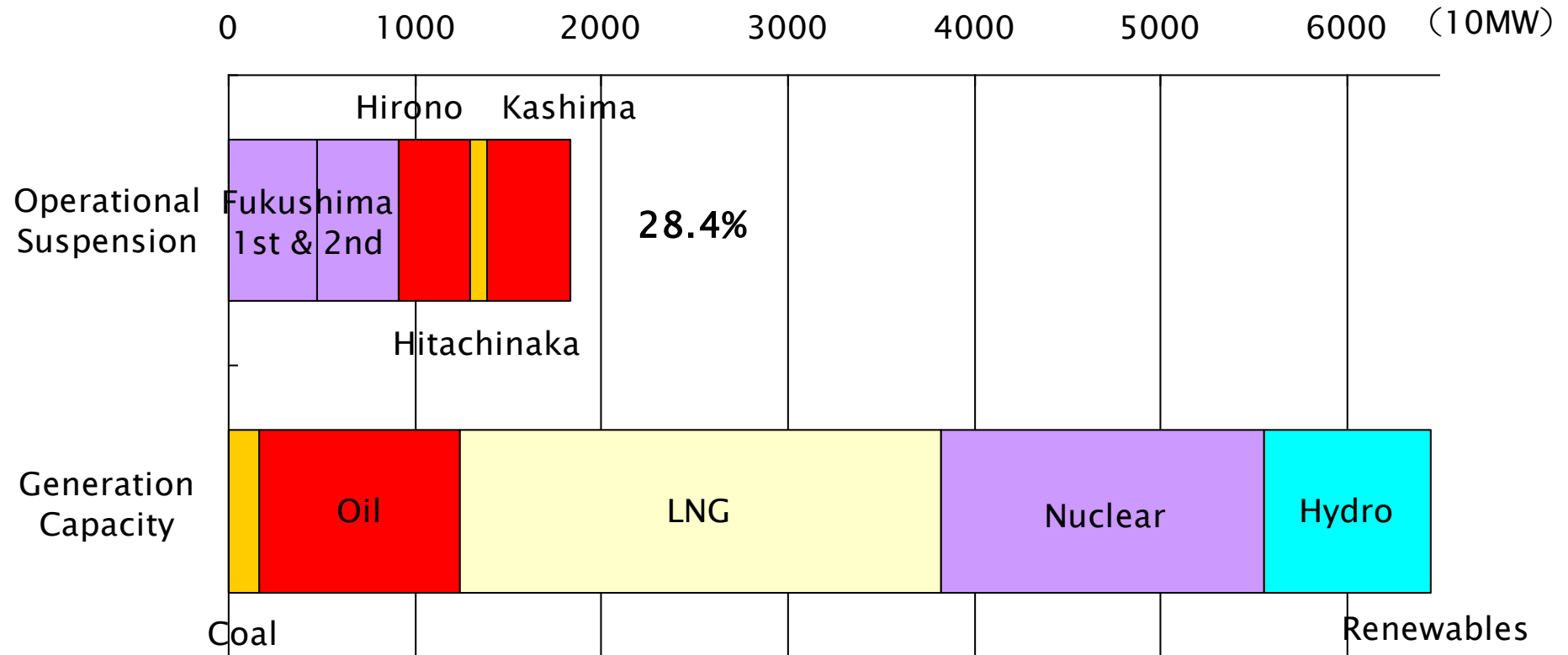
(# of households affected : K)

(Average temperature : °C)



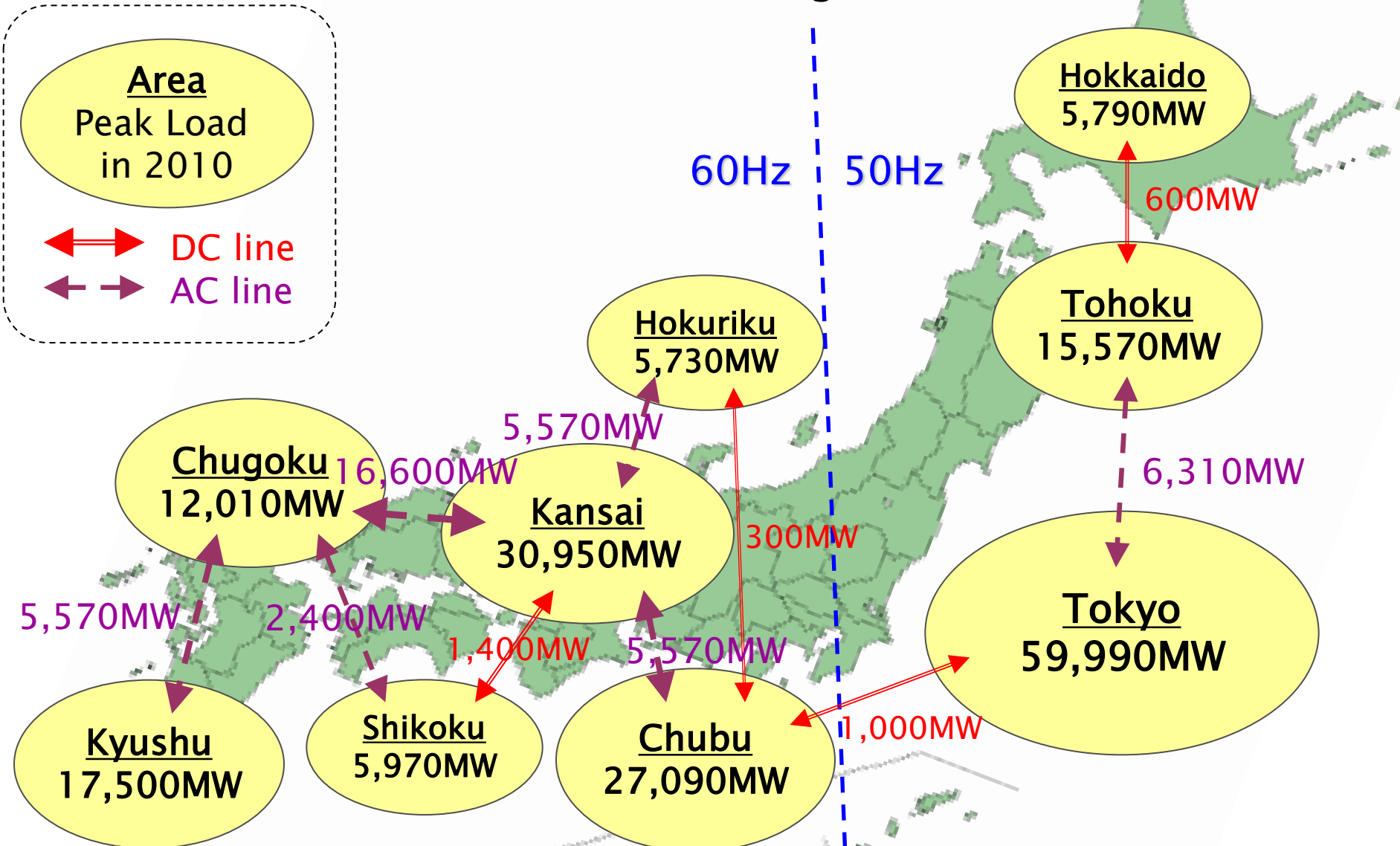
# Drop-out of Large-scale Generators

## - TEPCO's Power Source Mix -



# Limited Inter-regional Grid

- 9 Utilities and Inter-regional Grid -

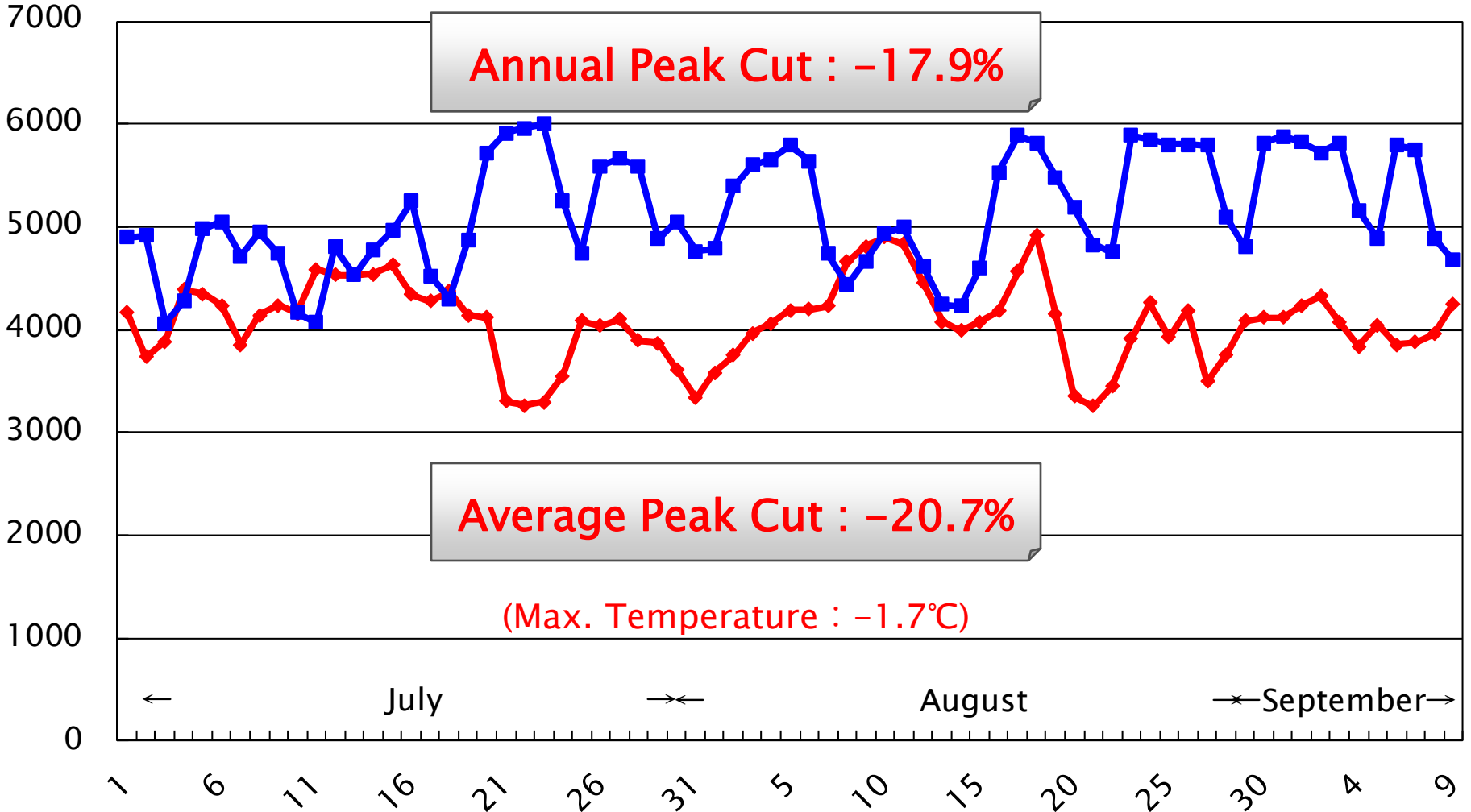


# Summer, 2011 : “Demand Restriction” FUJITSU

– Peak Demand in TEPCO’s Business Area –



(10MW)



# “Less Smart” DR

## – Actions by Large-size Users to Cut Peak Demand –

### 1. Power-saving at Offices

- thin out electric lights, change to LED bulbs
- set air-conditioners at 28°C

### Expenditure/Burden

- capital investment

### 2. Change of Work Style

- wear “cool-biz” light clothing
- take longer holidays, work on weekends

- psychological burden
- labor cost

### 3. Production Adjustment

- operate factories on weekends or at nights
- produce in advance, accumulate inventory
- shift production to western or outside Japan

- inventory cost
- profit loss
- coordination cost

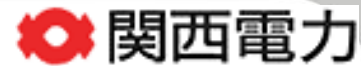
### 4. In-house Power Generation

- introduce & operate co-generation, PV
- utilize NAS battery

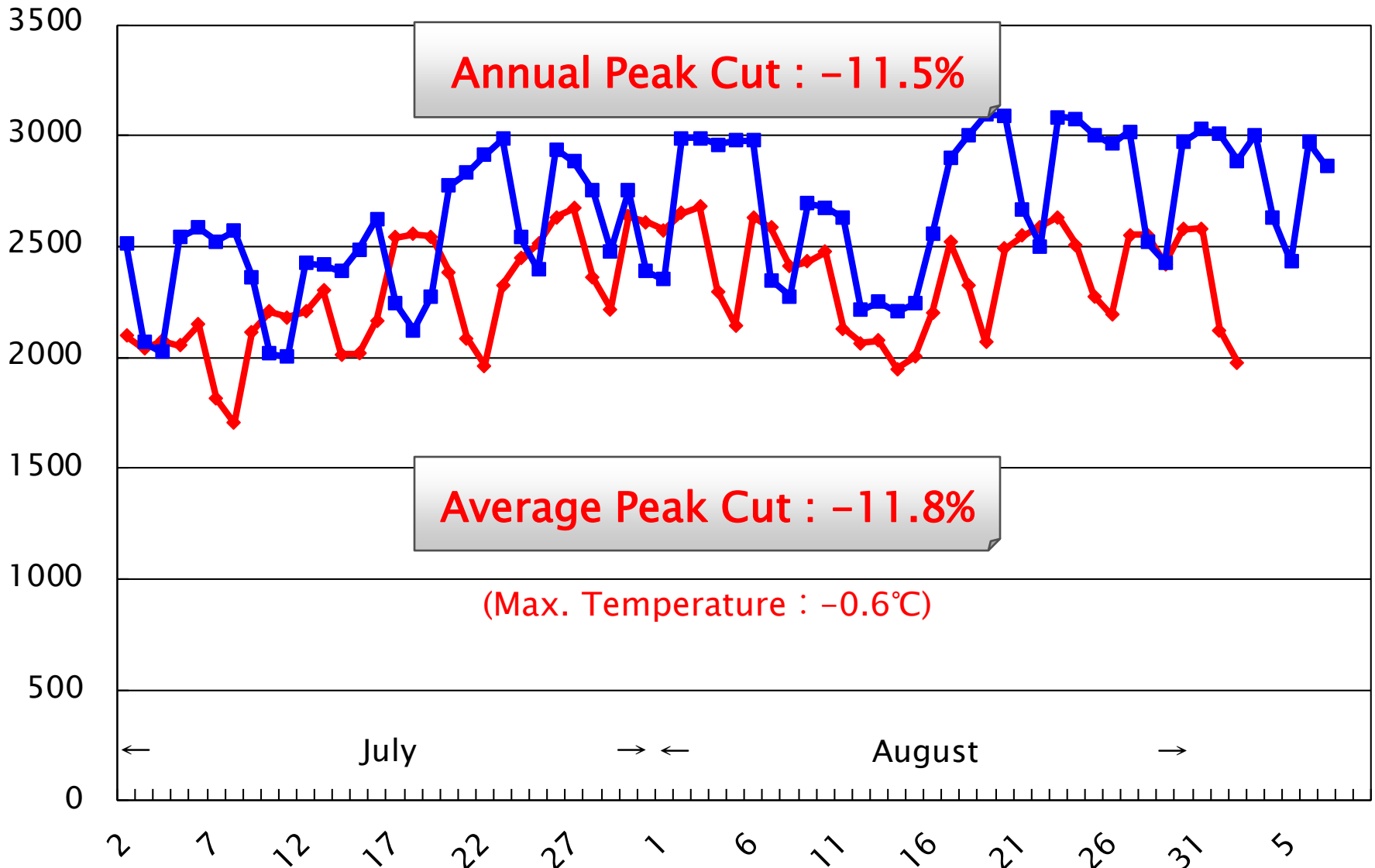
additional investment  
a few billion yen  
at maximum

# Summer, 2012 : Smarter DR?

– Peak Demand in KEPCO's Business Area –



(10MW)





# Agenda for System Reform

## “Basic Policy” by Power System Reform Committee

### Full Market Liberalization

- liberalize households market : more choices for all users
- DR services : rebate program, dynamic pricing, negawatt trading

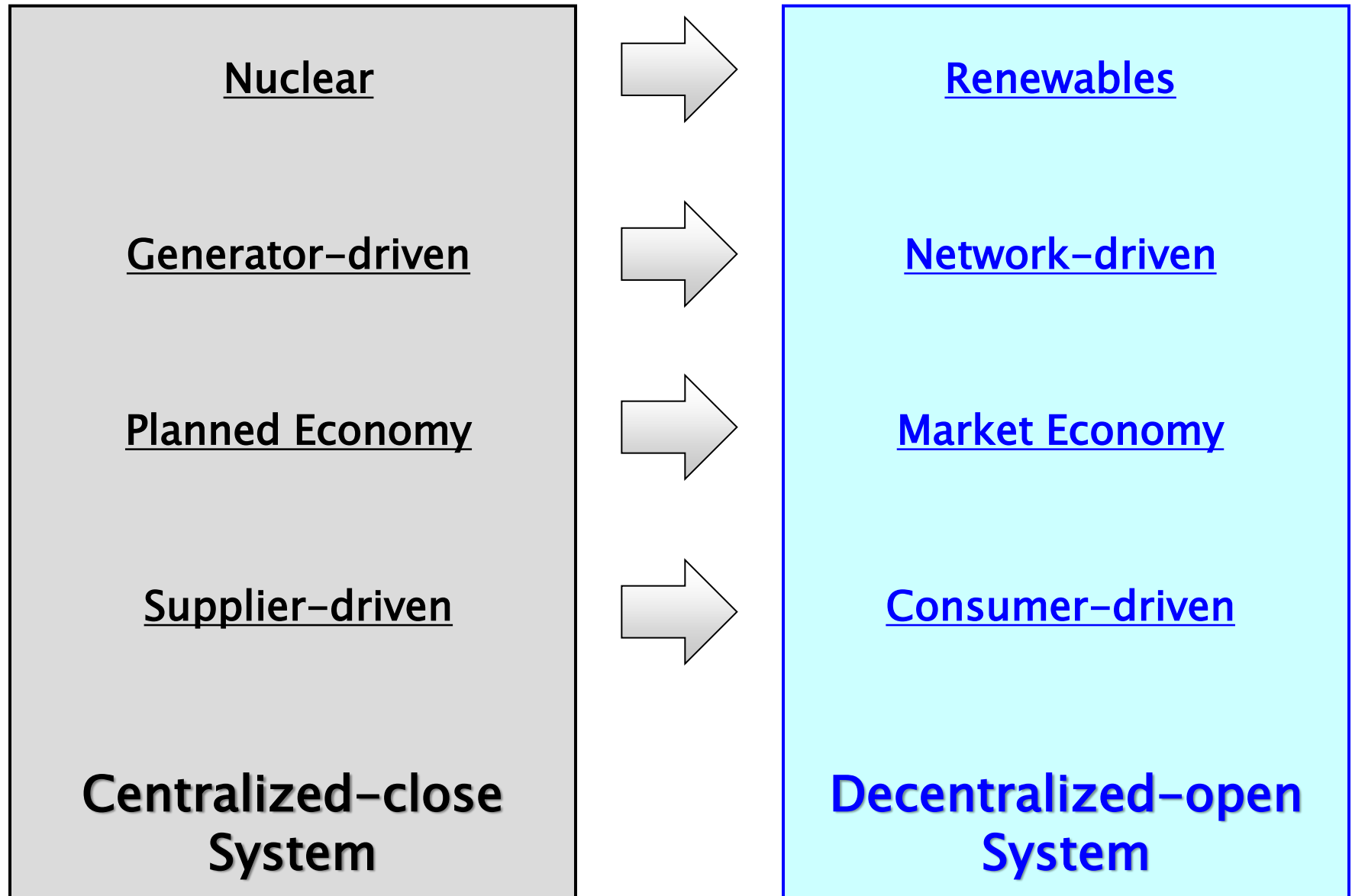
### Unbundling of Transmission Grid

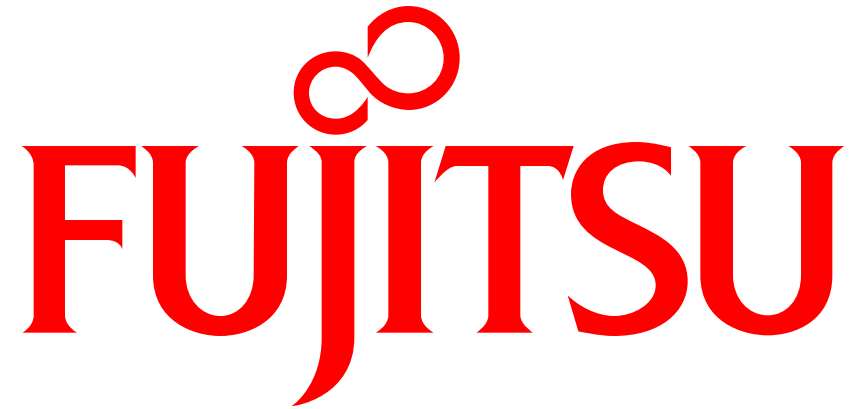
- operational unbundling or legal unbundling
- establish wide-area system operator/coordinator

### Reregulation for more Competition

- abolish wholesale generator regulation
- vitalize power market : compulsory tendering
- market monitoring by independent regulator

# Vision toward Decentralized-open System





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